

CLAIMS:

1. A pressure vessel comprising:
a tank having a tank wall and including a tank opening in the tank wall, the tank wall defining an enclosed interior volume;
5 a corrosion protection device removably positionable in the tank opening to seal the tank, the corrosion protection device including a plug and an anode, the plug coupled to the tank in an electrically conductive relationship, the anode coupled to the plug in an electrically conductive relationship, such that when the plug is positioned in the tank opening the anode is exposed to the interior volume of the tank; and
10 a passage extending at least partially through the corrosion protection device, the passage in fluid flow communication with the outside atmosphere, the anode disposed between the passage and the interior volume to seal the passage from the interior volume.
2. The pressure vessel of claim 1, wherein the plug is disposed near the
15 bottom of the tank.
3. The pressure vessel of claim 1, wherein the anode corrodes at a faster rate than the tank corrodes.
- 20 4. The pressure vessel of claim 1, wherein the anode has a lower redox potential than the tank.
5. The pressure vessel of claim 1, wherein the tank is made of steel.
- 25 6. The pressure vessel of claim 1, wherein the anode is made of magnesium.
7. The pressure vessel of claim 1, wherein the anode is made of aluminum.
8. The pressure vessel of claim 1, wherein the plug is screwed into the tank
30 opening with a threaded connection.
9. The pressure vessel of claim 8, wherein the plug is screwed into the tank with a left-hand thread.

10. The pressure vessel of claim 1, wherein the plug has a let down valve movable between an open position and closed position, and the let down valve may release moisture and pressure from within the tank when the let down valve is in the open position.

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11. The pressure vessel of claim 1, wherein the interior volume is in fluid flow communication with the passage after corrosion has consumed a sufficient portion of the anode to expose the passage to the interior volume of the tank.

10 12. The pressure vessel of claim 1, wherein the passage extends into the anode.

13. The pressure vessel of claim 1, wherein the anode is threadedly engaged with the plug.

15 14. The pressure vessel of claim 1, wherein a galvanic circuit is formed between the anode, the plug, the tank, and moisture within the tank.

15. The pressure vessel of claim 1, further comprising:
a port in the tank;
20 a second plug removably positionable in the port to seal the tank, the second plug made from an electrically conductive material; and
a second anode disposed within the tank, wherein the second anode is interconnected to the second plug in an electrically conductive relationship.

25 16. The pressure vessel of claim 15, further comprising a wire interconnected to the second anode and the second plug, wherein the second anode and second plug are interconnected in an electrically conductive relationship.

17. The pressure vessel of claim 16, wherein the wire is a stainless steel spring.

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18. The pressure vessel of claim 15, wherein a mesh at least partially surrounds the second anode, and separates the second anode from direct contact with the tank, the mesh being made from an electrically insulative material.

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19. The pressure vessel of claim 15, wherein a galvanic circuit is formed between the second anode, the second plug, the tank, and condensate within the tank.

5 20. The pressure vessel of claim 15, wherein the second anode corrodes faster than the tank corrodes.

21. The pressure vessel of claim 15, wherein the second anode has a lower redox potential than the tank.

10 22. The pressure vessel of claim 15, wherein the tank is made of steel.

23. The pressure vessel of claim 15, wherein the anode is made of magnesium.

15 24. The pressure vessel of claim 15, further comprising a third anode disposed within the tank, wherein the third anode is interconnected to the second plug in an electrically conductive relationship.

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25. A pressure vessel comprising:
a tank defining an enclosed interior volume, the tank having a main port and a tell-tale port;

5 a main plug removably positionable in the main port to seal the tank, the main plug coupled to the tank in an electrically conductive relationship;

a primary anode disposed within the tank, and interconnected in an electrically conductive relationship to the main plug; and

10 a tell-tale plug removably positionable in the tell-tale port to seal the tank, the tell-tale plug coupled to the tank in an electrically conductive relationship, the tell-tale plug comprising:

a passage extending at least partially through the tell-tale plug; and

15 a tell-tale anode coupled to the tell-tale plug in an electrically conductive relationship, the tell-tale anode disposed between the interior volume and the passage, wherein the tell-tale anode is exposed to the interior volume and seals the passage from the interior volume.

26. The pressure vessel of claim 25, wherein the interior volume is in fluid flow communication with the passage after corrosion has consumed a sufficient portion of the tell-tale anode to expose the passage to the interior volume of the tank.

20 27. The pressure vessel of claim 25, wherein the primary anode is interconnected to the main plug in an electrically conductive relationship through a wire.

25 28. The pressure vessel of claim 27, wherein the wire is a stainless steel spring.

29. The pressure vessel of claim 25, wherein a mesh at least partially surrounds the primary anode, and separates the primary anode from direct contact with the tank, the mesh being made from an electrically insulative material.

30 30. The pressure vessel of claim 25, wherein a first galvanic circuit is formed between the primary anode, the main plug, the tank, and condensate within the tank; and
a second galvanic circuit is formed between the tell-tale anode, the tell-tale plug, the tank, and condensate within the tank.

31. The pressure vessel of claim 25, wherein the primary anode and the tell-tale anode corrode at a faster rate than the tank corrodes.

5 32. The pressure vessel of claim 25, wherein the primary anode and the tell-tale anode have a lower redox potential than the tank.

33. The pressure vessel of claim 25, wherein the primary anode corrodes at a faster rate than the tell-tale anode.

10 34. The pressure vessel of claim 25, wherein the primary anode has a lower redox potential than the tell-tale anode.

35. The pressure vessel of claim 25, wherein the tank is made of steel.

15 36. The pressure vessel of claim 25, wherein the primary anode is made of magnesium.

37. The pressure vessel of claim 25, wherein the tell-tale anode is made of magnesium.

20 38. The pressure vessel of claim 25, wherein a compound is disposed between the tell-tale anode and the tell-tale plug to retard the transfer of electrons between the tell-tale anode and the tell-tale plug.

25 39. The pressure vessel of claim 25, wherein the tell-tale anode is made of aluminum.

40. The pressure vessel of claim 25, wherein the primary anode is an elongated rod extending along the length of the tank.

30 41. The pressure vessel of claim 25, wherein the primary cylindrical anode is disposed near the bottom of the tank.

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42. The pressure vessel of claim 25, wherein the primary anode is an elongated semi-circular shaped member.

5 43. The pressure vessel of claim 25, wherein the primary anode is an elongated spiral-shaped member.

10 44. The pressure vessel of claim 25, further comprising a secondary anode disposed within the tank, wherein the secondary anode is interconnected in an electrically conductive relationship to the main plug through a wire.

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45. A corrosion protection device for a pressurized steel tank having a port, the corrosion protection device comprising:

a plug removably positionable in the port to seal the tank, the plug coupled to the tank in an electrically conductive relationship;

5 an anode coupled to the plug in an electrically conductive relationship, wherein the anode is exposed to the interior volume of the tank when the plug is positioned in the port;

a passage extending through the plug, the passage in fluid flow communication with the outside atmosphere, wherein the anode is disposed between the passage and the interior volume and seals the passage from the interior volume; and

10 wherein the anode is made from a material that corrodes at a faster rate than the tank corrodes.

46. The corrosion protection device of claim 45, wherein the passage is in fluid flow communication with the interior volume of the tank after corrosion has consumed a
15 sufficient portion of the anode to expose the passage to the interior volume of the tank.

47. The corrosion protection device of claim 45, wherein the anode has a lower redox potential than the tank.

20 48. The corrosion protection device of claim 45, wherein the anode is made from magnesium.

49. The corrosion protection device of claim 45, further comprising a second anode disposed within the tank, wherein the second anode does not directly contact the
25 tank, and the second anode is interconnected in an electrically conductive relationship to the tank.

50. The pressure vessel of claim 45, wherein a mesh at least partially surrounds the second anode, and separates the second anode from direct contact with the tank, the
30 mesh being made from an electrically insulative material.

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